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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/539,251  
Filing Date: June 15, 2005  
Appellant(s): LANKHORST ET AL.

\_\_\_\_\_  
Robert J. Crawford  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 1/12/09 and amended appeal brief filed 3/6/09 from the Office action mailed 8/15/08.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,912,839

OVSHINSKY

6-1999

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 thru 7, 9 thru 11, and 17 thru 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ovshinsky et al. 5,912,839. Ovshinsky discloses (see, for example, FIG -2) a memory element (electric device) comprising a memory material (phase change material) 36. In column 18, lines 31-47, Ovshinsky discloses a Te-Ge-Sb alloy wherein Te may comprise 23-58%, Ge may comprise 8%-30%, and Sb will comprise the rest. With such a scenario, a may equal 67, and b may equal 23.

Regarding the limitation "via crystallization initiating at an interface between crystalline and amorphous materials", Ovshinsky discloses (see, for example, column 18, lines 31-47) a material (i.e.  $\text{Sb}_{67}\text{Te}_{23}\text{Ge}_{10}$ ), which changes from an amorphous to crystalline phase and vice versa by the process of crystal growth (see, for example, column 12, lines 27-41). Further, the material is the same material disclosed in appellant's claim 9, and therefore, such a limitation/property, would also be inherent in the material disclosed in Ovshinsky.

Regarding claims 2-5, 7, 9, and 10, see, for example, page 12, lines 25-page 13, lines 6 of applicant's specification, column 17, lines 55-63 and column 18, lines 31-47 of Ovshinsky wherein Ovshinsky discloses a Te-Ge-Sb alloy wherein Te may comprise 23-58%, Ge may comprise 8%-30%, and Sb will comprise the rest. With such a scenario, a may equal 67, and b may equal 23.

Regarding claim 6, see, for example, column 17, lines 58-60 wherein Ovshinsky discloses that the phase change material includes one or more elements, which may not include Te.

Regarding claim 18, see, for example, FIG-2 wherein Ovshinsky discloses a memory element (electric device) 14 comprising a memory material (fast growth phase change material)

36 which changes from a crystalline phase (crystallization layer) to an amorphous phase. In column 11, lines 50-66, Ovshinsky discloses the memory material wherein at least a portion of the volume of memory material changes from a less ordered "amorphous" condition to a more-ordered "crystalline" condition. In column 12, lines 27-41, Ovshinsky discloses energy pulses applied to the volume of memory material "modifies" the material by causing some amount of crystallization (i.e. nucleation and/or crystal growth) in at least a portion thereof.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ovshinsky et al. 5,912,839. Ovshinsky discloses (see, for example, column 17, lines 58-60) discloses that the phase change material includes one or more elements, which may include Sn. Ovshinsky does not disclose the concentrations which range in total between 5 and 30 atomic percent. However, the concentrations are result effective variables that one of ordinary skill in the art would optimize to store data. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to have the concentrations which range in total between 5 and 30 atomic percent, since it has been held that discovering the optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

***(10) Response to Argument***

Regarding the appellant's argument A on pages 4, 5 of the appeal brief filed 1/12/09, this argument is not persuasive because the 112 rejection is withdrawn and now longer part of the rejection.

Regarding the appellant's argument B1 on page 5 that the Office Actions of record have improperly failed to accord patentable weight to (and ignored) various claim limitations, this argument is not persuasive. The Office Action mailed 8/15/08 stated that the material used in Ovshinsky is the same material used in the appellant's specification and dependent claim 9, and therefore, one of ordinary skill in the art would have understood that the material disclosed in Ovshinsky would have had the same properties disclosed in appellant's claim 1 unless proven otherwise. However, the appellant has not proven otherwise since the appellant has not provided any contradicting evidence why the same chemical material in Ovshinsky would act differently and have different inherent properties than the same chemical material disclosed in appellant's claims, and therefore, the burden of proof is unfulfilled and still on the appellant.

The appellant argues that the Office Action's assumption that the claimed phase change material can not be configurable for operation in both crystalline and amorphous phase, or can not include both crystalline and amorphous material, is contrary to Appellant's specification, well-understood operation of such materials in the art and various issued patent claims, this argument is not persuasive because the appellant has not shown the burden of proof why such properties (i.e. capable of being in crystalline and amorphous phase) would not be inherent in the material disclosed in Ovshinsky which is the same material stated in the appellant's claims. Furthermore, for the sake of arguendo, Ovshinsky, in fact, does disclose a material wherein the

material changes (i.e. programming of the memory material) from an amorphous phase to a crystalline phase. In column 11, lines 50-66, Ovshinsky discloses the memory material wherein at least a portion of the volume of memory material changes from a less ordered "amorphous" condition to a more-ordered "crystalline" condition. In column 12, lines 27-41, Ovshinsky discloses energy pulses applied to the volume of memory material "modifies" the material by causing some amount of crystallization (i.e. nucleation and/or crystal growth) in at least a portion thereof. The reverse case (i.e. erasing of the memory material) is disclosed in column 14, lines 53-65 wherein Ovshinsky discloses the memory material changes from a more-ordered crystalline state to a less-ordered amorphous state.

Regarding the appellant's argument B2 on page 6 that the rejection is improperly based upon allegedly inherent structures, this argument is not persuasive. The appellant has not provided any evidence why SbTeX memory material disclosed in Ovshinsky would not have the same properties as the SbTeX material disclosed by the appellant's invention. The appellant's invention and Ovshinsky's invention are directed towards the same subject matter (multi-state memory device; see, for example, page 2, lines 17-24 wherein appellant discloses its use as a memory cell, and the title of Ovshinsky's invention patent) wherein the use of the memory material is the same. The appellant's argument that the cited alloy can not inherently provide correspondence to the claimed invention, because the '839 reference uses materials and approaches that are wholly different from the claimed invention in nature and operation, this argument is not persuasive because the materials are the same and approaches are extremely similar as they are directed to memory elements changing from an amorphous to a crystalline state and vice versa. Ovshinsky further discloses (see, for example, column 11, lines 42-60, and

column 14, line 66) electrical current being used to transition the memory material from a crystalline state to an amorphous state in the same manner that is recited in the appellant's claims (i.e. the resistor being able to conduct a current for enabling a transition from the first phase to the second phase, the phase change material being a fast growth material).

Regarding the appellant's argument 3 on page 7 that the section 102 (b) rejections must also be reversed because the Office Actions of record have ignored and/or failed to assert correspondence to multiple claims limitations, this argument is not persuasive because these limitations, as already stated above, are properties inherent in the material recited by Ovshinsky. The appellant has not shifted the burden of proof because the appellant has not provided any contradicting evidence that such a material in Ovshinsky would operate or have different properties than the same material disclosed in the appellant's claims. Further, as already disclosed above, Ovshinsky does indeed disclose a fast growth phase change material that changes phase in response to an electrical pulse and a resistor that has a resistance dependent upon the phase of the phase change material.

Regarding the appellant's argument C on page 7 that the rejection of claim 8 must be reversed is not persuasive because, as already discussed above, the limitations of the appellant's claims are inherent in the material disclosed by Ovshinsky and unless proved otherwise there is no reason to presume that the Ovshinsky's material would operate differently than the same material disclosed by the appellant's invention. The argument regarding the 112 rejection is moot because it has been withdrawn.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Eugene Lee

AU 2815

/Eugene Lee/

Primary Examiner, Art Unit 2815

Conferees:

/Kenneth A Parker/  
Supervisory Patent Examiner, Art Unit 2815

Tulsidas Patel  
/T C Patel/  
Supervisory Patent Examiner, Art Unit 2839